

**WEISS**

**IMAGING AND SOLUTIONS GmbH**

Bildverarbeitung und Entwicklungen  
für Forschung und Industrie

**IQbase™**

## The Intelligent Image Informatics Solution

**Store, manage and extract knowledge from all of your images and associated data – from desktop to enterprise.**

IQbase is the ideal solution for technical professionals who accumulate a tremendous number of images in the course of their work. The need to extract more information from this wealth of image data increases in importance every day. Unlike database products designed for business applications, IQbase provides accessibility from the pixel level to the meta-data level.

The need to manage image information has led to the new scientific discipline of image informatics. IQbase has been designed and built specifically as an image informatics solution. No other image database software offers the sophisticated level of data integration, scalability, and customization of IQbase.



### Key IQbase Benefits:

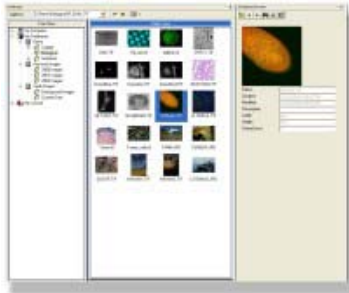
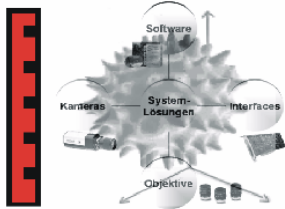
- **Manages images and data** - Secure, shared, searchable storage of images, together with associated data, means never losing valuable research.
- **Drives discovery** - Advanced querying tools allow you to expose information hidden within individual images or across all of your images.
- **Facilitates collaboration** - Server version allows secure multi-user sharing and collaboration of images and data via the network. Optional web interface allows display of stored images and data via the web.
- **Easy to use** - Quickly archive and manage images together with data. Drag and drop images or associated data directly into IQbase. No special database skills are required to create databases, folders, fields, or search queries.
- **Works the way you do** - Included customization options and a built-in Microsoft VBA® interface allow you to create custom workflows and VBA macros.
- **Grows with your organization** - Add seats or upgrade to server version as your projects expand.
- **Built by Media Cybernetics** - Media Cybernetics was founded in 1981 as the pioneer of PC-based imaging solutions. Media Cybernetics products reflect the maturity of more than 20 years of development, evolution, and user feedback.



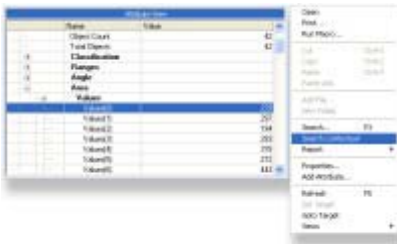
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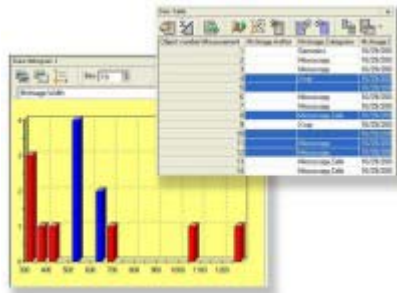
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**Load and Create Databases**



**Conduct Context-sensitive Searches**



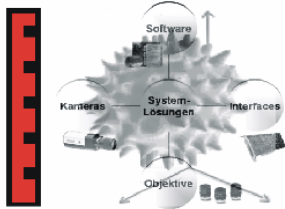
**Display and Interact with Image Data**



**Share Information via Email or Web**



**Customize Reports**

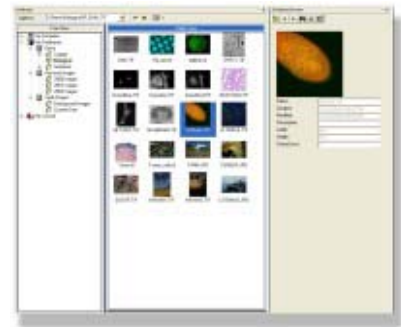


## Features | Screenshots

### Intelligent Archiving..

#### Fast and Easy-to-Use

- Archive images and related data together, rather than cataloging experiments in spreadsheets and notebooks
- Drag and drop images and files into IQbase
- Add single images or entire volumes of images and data
- Store data in the database or as a pointer to another location
- View archived images and related data simultaneously
- Navigate through any number of databases using a familiar and intuitive organizational structure



#### Archive Automatically from within Image-Pro® Plus

- Image-Pro Plus users can automatically populate databases with information derived from analysis
- Populate your data fields (count/size, measurements, etc.) with the click of a button
- Requires no need for manual input
- Allows you to spend more time on your analysis and less time on data management
- IQbase works seamlessly with Image-Pro but Image-Pro is not required to use IQbase

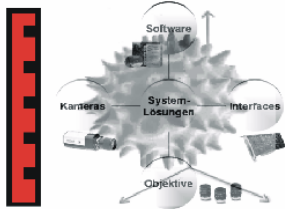


### Intelligent Management..

#### Customize to Fit Your Workflow

- Create unique identities for different users, projects, etc. by reconfiguring shortcuts and screen layouts
- Add your own data fields to reflect the type of work you do and the images you use
- Maintain complete security with user logins and passwords





### Automate Repetitive Tasks

- Build macros to automate workflows and processes
- Save all your preferences and settings to use next time
- Extend the interface and capabilities with Microsoft® Visual Basic® for Applications



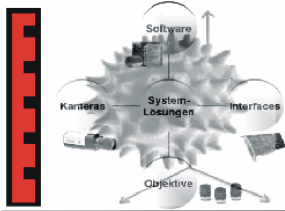
### Save Time with Powerful Search Tools

- Locate TIF, JPEG, AVI, BMP, Dicom, PNG, TGA, and other types of archived images on hard drives, removable media, or networked storage
- Quickly find important data by conducting and saving context-sensitive queries
- Never repeat research due to lost data



### Grows With Your Organization

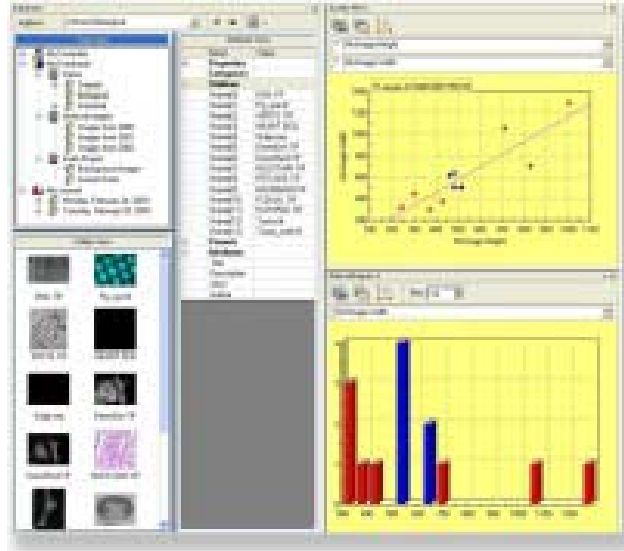
- Interoperability levels available for individuals, small workgroups, and entire enterprises
- Start with the version that fits you now, add seats or upgrade as your projects expand
- Scale from a few to a nearly infinite number of records
- Compatible with Oracle®, DB2®, MS-SQL®, and other types of databases
- Build macros to automate workflows and processes



## Intelligent Discovery..

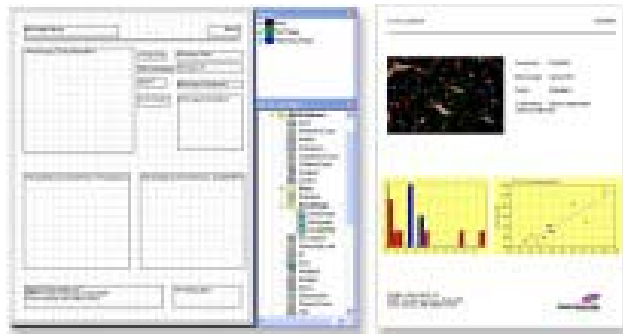
### Uncover Insights Hidden Within Your Images

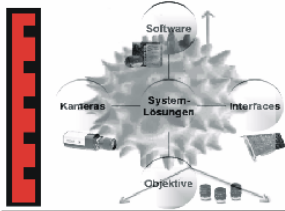
- Detect hidden patterns and trends, even among very large numbers of images and variables
- Filter, sort, and query images using any related information or measurements
- Graphically display and interact with image data to expose hidden information



### Facilitates Collaboration

- Quickly create and save customized reports with easy-to-use templates
- Publish reports in a range of formats, including Adobe® PDF, RTF, Microsoft® Word compatible, and HTML.
- Send images using your preferred email client
- Share images and related data via the Web with our Web Publishing options



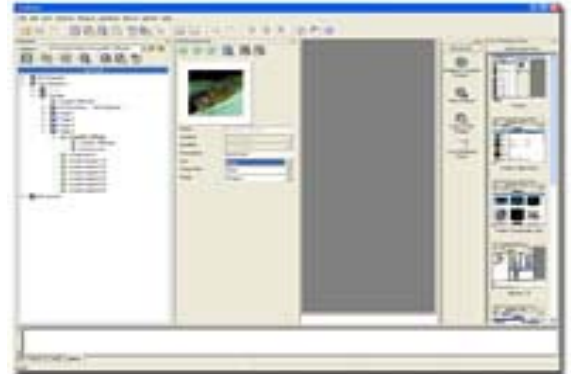


## New Features in Version 1.1

### Enhanced User Interface

The new features in IQbase 1.1 make it even easier to archive, manage, and mine images and research data.

- IQbase 1.1 now opens to the most commonly-used database windows - spend less time looking for the tools you need to begin your work
- View all types of data in the Tree View including images and measurements - see all of your data in one window
- See thumbnails of your images as you browse through their associated data in the database folder view
- IQbase remembers your current database location when it closes - return to exactly what you were reviewing during your last session



The enhanced user interface of IQbase 1.1 offers you more flexibility and control



See thumbnails of your images as you browse through their associated data in the database folder view

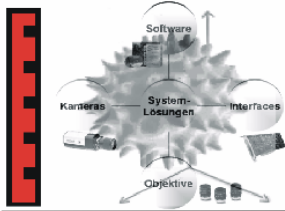
### Choose Your Favorite Layout

The new Tour Database Views window lets you easily switch from one database layout to another. Use one of the example layouts, or save your current layout for later use.

- Easily switch from one database layout to another
- Maintain all your current database addresses in the new layout(s) - no need to start from scratch
- Save your customized layouts to the Tour Database Views dialog for later use - return to past layouts if a new configuration doesn't fit your needs



Select your favorite database layout from a variety of options with the Tour Database Views window.



## Scan Your Disk Drives for Images and Files

The new Scan for My Images Wizard allows you to scan disk drives for images and files. Save time searching for file types and automatically archive these files to your database.

- Select the file extensions you would like to find
- Define which folders the Wizard should scan
- View all the directories that contained one or more of the located file extensions
- Choose how you would like these images and files to be organized in your database (duplicate the file hierarchy, save only the immediate parent folder, organize by image type, or organize by image date)



Use the Scan Images Wizard to scan disk drives for images and other files

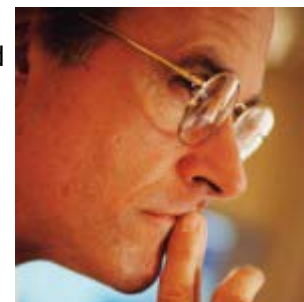
## Easy Data Entry for Complete Records

IQbase 1.1 includes an optional Data Entry Form that prompts you to enter data about your images as you archive.

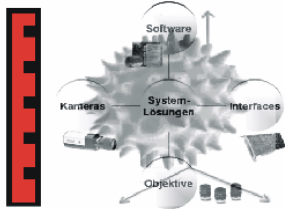
- Keep consistent and complete records of your images and research
- Opens automatically when you add an image to the database
- Prompts for image information including author, image title, and description
- Customize your Data Entry Form to ensure that you save the right data for your projects

## Too Many Images

Bob has been working with Image-Pro software for the past four years. At first he just wanted to document his experiments and add some nice images for publication. As he became more experienced with image analysis, he started to demand more from his software and pretty soon, he was capturing large volumes of data every week as an integral part of the many ongoing experiments in his lab.



"The solution I was using to track my images was primitive compared to the analysis I was doing with them. I was trying to depend on my computer's file system to be the storage and archiving solution. Initially, this system worked for me, but as my analysis became more advanced, I found it was increasingly difficult to locate my important data." Bob lamented. "I needed a tool that could help me find my data, before I lost something critical!"



IQbase turned out to be the ideal solution for Bob. "All I do is hit the archive button and everything starts to happen. I can even have IQbase prompt me for fields that I must fill in for each sample. I can decide on-the-fly what fields are a part of my database. I don't have to devise the entire schema before my experiment starts. I can let the experiment decide the way I will structure my data." said Bob.

Bob also discovered that IQbase's offline storage feature was a real plus for integrating his older data. "With IQbase, it doesn't matter where the original data is physically stored. If I need it, IQbase will tell me where to find it!"

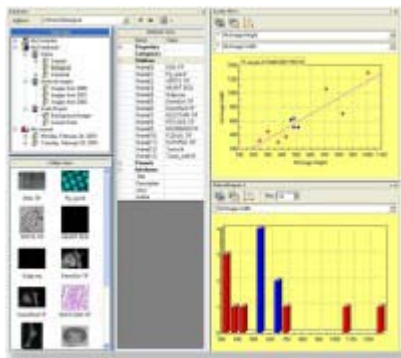
IQbase is the perfect solution for helping you manage your ever-growing amounts of data.

## Finding Trends in Image Data

Teresa, a graduate student working on her doctoral thesis, has collected data from many different sources over the course of her research. Before her lab purchased IQbase, she tried to integrate her data into spreadsheets in attempts to view the results from her many sources.



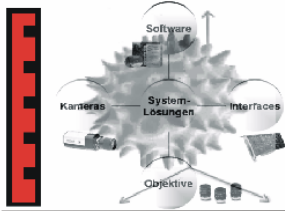
"I was using software that shipped with my computer to try to find trends among my data. These products were not made to visualize scientific data. It was very frustrating and time-consuming." Teresa recalled. "Now I can keep track of my data, visualize it, and looks for trends with a single product!"



Teresa uses IQbase's Data View features to plot different measurements against each other and to look for trends. The graphs and charts made in IQbase interact with the tables and database so that you can easily see where the data originally came from and try to look for similar trends in other databases and experimental groups.

"The best part about searching for trends in IQbase is that you don't have to learn how to create queries using some complicated language. You just click on the measurement you are interested in and IQbase creates the query for you automatically. You can save your queries and run them later or on different data sets so you can mine the information you are collecting in real time. It is truly amazing!" Teresa exclaimed.

IQbase is the perfect solution for storing your data and mining it for unknown trends



## Automating Quality Assurance

Cord is the manager of an independent Quality Assurance testing facility. His facility accepts new projects from numerous customers on a daily basis. He and his team must be able to efficiently manage and track these new projects. IQbase's project feature has helped automate this process.

"I create a new project with a single click and all of the data gets stored inside the project. When my customers call to see what the



Click on image for screenshot.

status of their analysis is, I can tell them instantly." said Cord.

Generating reports that summarize the analysis has helped Cord improve on cycle time and customer satisfaction. "IQbase has tremendously improved our operation and workflow. I just wish we had started using it sooner!" Cord stated.

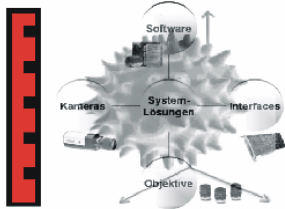
IQbase is the perfect solution for automating your work process and helping to manage it.

## Flexible Solution for IT Managers

Nancy is the IT manager for a neuroscience department at a small university. The members of her department tend to work on many different projects that are sometimes collaborative, and sometimes independent. Each member of her department likes to structure data differently and each member likes to interact with software in unique ways. In addition, users were continually asking Nancy to gather sample images of type X, or run a query for subtype Z. She chose a Small Workgroup installation of IQbase because it provided the perfect solution for her seemingly unique needs.

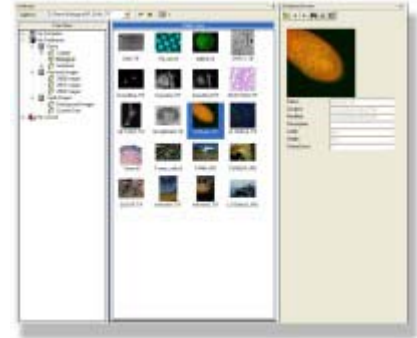


"IQbase databases can be protected by user login. That way a database that two researchers are collaborating on is secure from someone else working on a different project. The shared database configuration in our IQbase Small Workgroup allows us to grant rights to other members of the department to view the data but not edit it. This has been valuable in enabling us to share experiments with others, without the risk of having someone accidentally corrupting important data," related Nancy. And users now create their own queries and image collections with IQbase's easy contextual search and reporting features.



"IQbase allows the members of my department to customize their interfaces so that the product works the way that they want it to. One example is Dr. Viallo. He only wants to see the menus and buttons that he uses on a regular basis. IQbase allows him to remove the extraneous features from his display without affecting the way other department members work with the database."

Collaboration has increased among departments after Nancy added the Web interface to IQbase. "The Web interface is wonderful in that it allows people outside of our department to view our images and data without running IQbase themselves. IQbase automatically generates the web pages and users easily browse through them. Best of all, our data is secure since IQbase allows us to specify what will appear in the web page, and none of us need to know how to program in HTML to customize this information!", Nancy explained.



IQbase is the perfect solution for allowing communication, collaboration, and publication in today's fast-paced research environment.

# **IQbase™**

## **Beyond Image Analysis: Image Informatics**

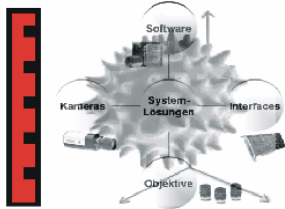
**Image informatics is the process of mining information and refining knowledge derived from images. It consists of accurately capturing images, extracting as much raw data as possible, analyzing that data with great precision, displaying it in a readily comprehensible form, sharing it with colleagues and other professionals, and using it within the context of individual disciplines.**

### **Introduction**

Processing image information is something we do every day. We take in visual clues from our environment, process them rapidly, and react appropriately to enhance our survival. Our brains retain a vast database of images which we constantly refine and compare against this deluge of new information pouring in. Millions of years of evolutionary biology have perfected our ability to deduce patterns from scant input and draw valid conclusions.



But our perceptions are subjective. And our conclusions are based on different sets of experiences. Much of the success of Western science is derived from controlling environmental conditions to be able to isolate specific variables that may cause certain



predictable effects. The ability to measure and quantitate observations removes individual subjectivity such that all may benefit from experimentation. In the last half century computers have accelerated the experimental process through capture, archiving, retrieval and query of these observations.

### **The Challenge to Manage Accumulating Image Data**

What comes so easily to us at an early age is proving to be difficult to emulate on a computer. The symbolic nature of language and mathematics lends itself well to binary representation in computer language. But image information is quite a bit more complex. Just a few years ago, it was a challenge and a great expense to get a video camera hooked up to a framegrabber board in order to digitize a single image coming in at the video rate (the rate of human perception). The first image processing software used one computer to massage a single image by one person. Now it is relatively easy and inexpensive for a single experiment to capture many images across many variables (wavelength, time, Z depth, positional site). It is so easy, that those who rely on imaging in the course of their work are flooded with electronic images sitting on their local hard drive, a network drive, CD-ROMs, tapes and a variety of other storage media. The need to manage, share, and draw conclusions from this accumulated data has grown exponentially without adequate tools to deal with it.

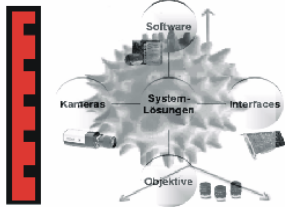
Researchers, production managers, and IT professionals have adapted commercial and open source software tools to meet this need. But these popular tools were designed to fit other needs and integration is a struggle. Relational databases were designed for business applications and handle alphanumeric data extremely well. The relationships within the data must be well-defined and set up within a rigid structure. While relational databases can be configured to point to a location of an image, the subsequent display and presentation options are severely limited. The setup and query functions are complex and often involve highly specialized IT departments to deal with the unique problems and languages. If a new field is desired relationships must be re-established and the entire database rebuilt. If a record is corrupted, elaborate repair operations must be performed.

Many have tried to use consumer digital picture album databases to keep track of their image data. But as these were designed for a mass market, the emphasis is on ease of use rather than scientific inquiry. The amount of contextual information that may be stored is fixed and limited. Few provisions are made for the creation of additional fields or linking to other sources of information or databases. These products don't stand up to "industrial strength" applications.

Others are relying on hard drives, removable media (CD-ROMs), spreadsheets, or even notebooks to store image data. Not only are these solutions difficult to query, but they often involve manual storage and retrieval methods that can result in lost or forgotten image data.

### **The Need for an Image Archiving Solution**

The ideal image storage solution should enable archiving images and data dynamically, rather than forcing storage of image information into rigidly structured databases which may not contain or be able to handle fields needed for proper archiving and future mining. It should also store images and related data together, allowing query of the database on both the micro and macro level. Rather than just being a location for storing research, this solution should provide the tools and resources needed to gain valuable



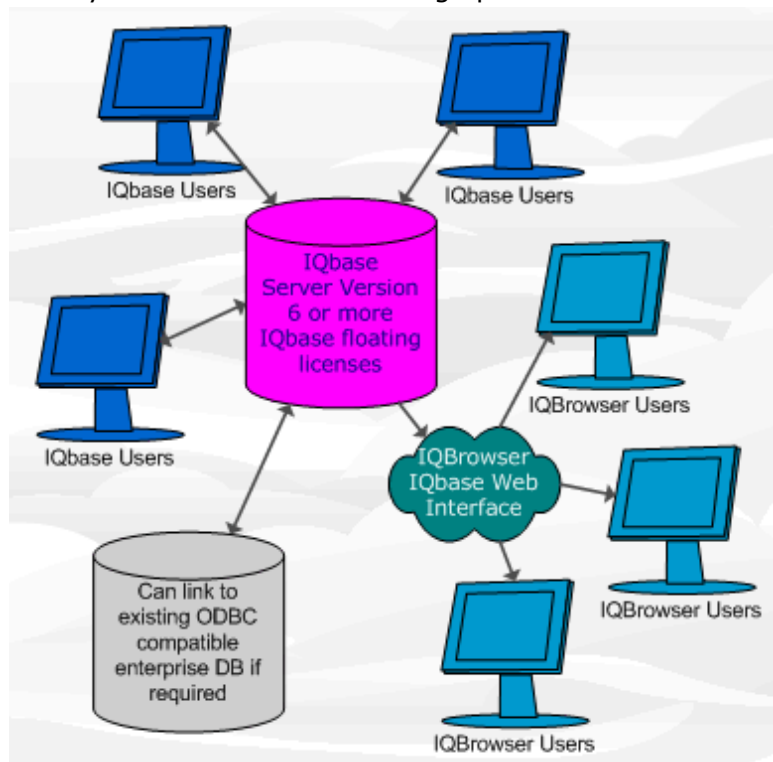
new insights from previously captured images. Not only should it be used to archive and mine information, but this solution should also facilitate collaboration so the findings can be shared in a secure and convenient environment.

**IQbase**

To help fill this void, Media Cybernetics has developed IQbase, an intelligent image database solution for lab managers, principal investigators, quality control managers, and IT professionals who accumulate a large number of images in the course of their work. Unlike other products that were designed for business applications, IQbase was designed especially for managing and archiving information derived from images.

IQbase was designed as an object-oriented database, so data fields associated with images can be updated, edited, and customized on an image-by-image basis without changing the structure of the entire database. IQbase stores images and their related data (such as height, width, morphological measurements, etc.) together. This not only provides easier data management, but also allows searching for similarities and trends among experimental variables.

Some of the most important features of an image informatics solution are its ability to drive discovery and facilitate collaboration. With IQbase, hidden patterns and trends can be detected within the database. Interactive graphics tools and advanced querying options enable IQbase to find similar results across multiple groups of images. Contextual queries allow retrieval of information related to the analysis of a single image and applying it to a larger volume of images, experiments, projects, or sets of databases. Collaboration among colleagues is enabled with the use of report designer tools and a variety of email and web sharing options.



**Conclusion**

A wealth of information lies untapped in collections of images from scientific experimentation. Now the tools are available to archive, manage, retrieve, query, report and communicate information derived from this metadata. Image informatics is the next great leap for image analysis.

**Typical IQbase Server Configuration**

IQbase is available in a multiple user server version or a single user workstation version. See the How to Order and FAQ pages for more information.

Technische Änderungen vorbehalten.

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